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The CHEMIST

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THE AMERICAN INSTITUTE OF CHEMISTS

HOWARD S. NEIMAN, *Secretary*

233 Broadway
New York, N. Y.

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Annual Meeting - 1940

THE eighteenth annual meeting of THE AMERICAN INSTITUTE OF CHEMISTS will be held at the Hotel Claridge, Atlantic City, New Jersey, on Saturday, May 18, 1940.

The program will include one or two speakers in the afternoon, followed by a business meeting at which will be given the reports of the Committees and Chapters for the year's activities. The medal of the INSTITUTE will be presented at a banquet to be held in the evening to a chemist who has rendered "noteworthy and outstanding service to the science of chemistry or the profession of chemist in America".

The following committee on arrangements has been appointed: Robert J. Moore, Chairman; Howard S. Neiman; Raymond E. Kirk; Gilbert E. Seil; Walter L. Obold, and H. C. Winter. The complete program and announcement of the medal recipient will appear in the next issue of *THE CHEMIST*.

Every member of the INSTITUTE who can possibly arrange to attend is urged to come to this annual meeting and to make it an outstanding success. Ladies are welcome, and they will find a spring vacation at Atlantic City particularly enjoyable. Special arrangements will be made for their entertainment.

A Bill to License Chemists in New York State

A bill for licensing chemists in New York State was introduced into both houses of the New York State Legislature. The complete story of its trials and tribulations during the ensuing weeks will be printed in the May issue of *THE CHEMIST*.

Roster of Members

Members of THE AMERICAN INSTITUTE OF CHEMISTS are requested to fill out the blank on page 68 and to return it to the Secretary, if they have not already done so. The April issue of *THE CHEMIST* will contain a directory of the membership.

CHEMISTRY HALL LIBRARY

Chemical Self-sufficiency

By C. M. A. Stine

Vice-president, E. I. duPont de Nemours and Company

**An abstract from Dr. Stine's address on the occasion of
his receipt of the Perkin Medal, January 12, 1940.**

THE developments in the organic chemical industry in the United States within the past two decades have achieved two signally tangible results: First the fostering of a tremendous expansion in the training of research workers in our universities, and the promotion of a great and widespread interest in organic research. This has had significant repercussions in virtually all fields of research, leading to expansion and intensification of effort and to results of enhanced value.

The second result has been the tremendous contribution to national self-sufficiency in this country which the rise of our organic chemical industry has made. There is good ground for believing that self-sufficiency very definitely makes for peace. Through research and synthesis we have obtained methods of preparing certain materials of organic origin which are not available in this country because of limitations of soil or of climate, or for some other reason inherent in our national economy.

For instance, we are not able to grow rubber in the United States, and even though climatic conditions were favorable, we should still be unable to harvest it at the low costs which now prevail in the rubber-producing countries. Research and the reduction to practice of the results of this research have not only contributed to our eventual independence in respect to certain natural fibers and in respect to rubber, but also have placed at our disposal methods for the manufacture of almost unlimited quantities of liquid and gaseous hydrocarbons from the vast natural resources of coal with which nature has endowed us.

This new organic chemical industry is a substantially one hundred per cent American development. It was conceived by American men and financed by American money. The brains which directed the research were American brains, and the methods employed in building up the industry were American methods. Without an unwavering faith in research, the organic chemical industry would not exist today. A clear vision of the possibilities of such an industry was essential; likewise essential was a plentiful supply of venture capital.

But let us not be puffed up with pride over our national state of

mind. Research expenditures by American industry as a whole, if estimated correctly at \$250,000,000 a year, are lower than the nation's annual bill for cosmetics by about \$150,000,000.

Those who would attribute to our scientific development the blame for our present national and international ills take an entirely superficial view. They overlook the horrible wars that have been waged all down the years when there was no science as we know it today. Until indoctrinated race antipathies and hatreds, envy and greed for power are eliminated from human nature through spiritual regeneration, we shall have no solution of this fatal disease—war—which afflicts humanity. Science, though it is able to confer the richest blessings upon mankind, is not able to change the heart of man and insure that the great increases in scientific knowledge will be beneficently applied.

The Young Chemist and the Government Service

By Louis Marshall, F.A.I.C.

**The eleventh of a series of articles on the
opportunities for chemists in the Government service.**

Forest Service

THE Forest Service of the Department of Agriculture is devoted to the study and administration of our immense national forests; comprising as they do nine per cent of the land area of continental United States. The underlying aim of this Service is to so utilize the forests as to make them of the greatest possible public value. This requires careful planning. Some of the questions which must be answered in scientific forestry are: What types of land are best suited for timber production; for watershed protection; for livestock grazing; forage production; wildlife promotion; recreational purposes, and so on. The neglect, in past years, of forest lands has created another acute challenge. The solutions to these problems depend not only on the scientific aspects, but on the economic and social factors as well. The Service has already made a great deal of progress in its work, and today, the national forests present a fine example of systematic planning for the public welfare. One of the big jobs of this service is to prevent forest fires, or to control them once they have started. Forest rangers are

ever on the alert, and all of the resources of modern science are brought to bear against this serious menace. Communications between forest camps are carried on by radio or telephone. During a fire, the affected region is surveyed by airplane, from which directions to the fire crews are issued. Airplanes and parachutes are used for the transportation of men and supplies, thus lessening the elapsed time between the start of the fire and the arrival of fire crews. Thus in the year 1939 the Forest Service fought and controlled 15,725 fires of varying magnitude, occurring in widely scattered localities. A study of forest fires has revealed that about thirty eight per cent are caused by lightning, twenty four per cent by careless smokers, twelve per cent by incendiaries, and the remainder are due to miscellaneous accidents. In other words, a very large proportion of forest fires are man-caused, and in order to reduce this, the Service is conducting a very intelligent educational campaign which, in time, will no doubt have the desired effect. Some of the official stationery of the Forest Service contains the inscription, "Prevent Forest Fires, It Pays".

The chemistry research work of the Service is conducted at the Forest Products Laboratory at Madison, Wisconsin. This institution was established in 1910, in coöperation with the University of Wisconsin which erected the building and provided for its maintenance. In 1932, a new building was completed. It is a very modern and beautiful structure, and in respect to the facilities which it offers for research in forest products, it stands unrivaled. The chemists at this institution have the opportunity of taking post-graduate work at the University of Wisconsin, where they may receive credit for the research work done in the Government laboratories.

One of the fruitful fields of investigation which has been carried out has been the modifying of the properties of wood through the use of chemical preservatives such as zinc chloride, creosote, and salt. One of the chemicals recently tried was invert sugar. It was found that suitable treating of railroad ties, for example, reduced the average tie replacements from 250 to 180 or less per mile of track per year, thus effecting an enormous saving to all the railroads. Chemical treatment of southern hardwoods, such as magnolia, hickory, and sycamore, reduced the time required to kiln dry comparatively thick boards, by more than half. The different kinds of wood which are treated by preservatives are given actual service tests to determine their value under working conditions. Fences of different species of wood are

built in various regions of the country and exposed for years to the different climatic conditions which obtain, thus providing the data for determining the most suitable coating for each kind of wood.

One of the fundamental studies which is continually going on is the determination of the chemistry of wood. Its main constituents are cellulose, which is the substance of the wood fibers, and lignin, which is the binding material holding these fibers together. In addition, wood has a small ash content, and a small amount of material which can be extracted by solvents. Of all these substances, cellulose is, at present, the only one having great commercial importance. Immense quantities are used in pulp, paper, lacquer, rayon, and viscose production. Its exact chemical structure has not been determined, and this is one of the problems engaging the attention of chemists. Another problem is the study of the chemistry of lignin which, according to recent investigations, appears to be a furan and not a benzine derivative as was formerly supposed. Furan is a closed-chain compound, consisting of five atoms. Many millions of tons of lignin have been discarded as waste, but it is safe to predict that patient and long-continuing researches will endow this material with value. Already it is used as a binding material for road surfaces and for plastics. Its utilization as a base for an organic nitrogenous fertilizer is receiving study. These fundamental investigations of the chemistry of wood are one of the means of accomplishing the aims of the Service, the production of more and better products of the forest.

The recent researches of the Forest Products Laboratory relative to pulp and paper have shown that small amounts of dissolved iron in water used in bleaching paper had a markedly deleterious effect on the quality of the product. For one thing, a trace of iron was found to lower the whiteness of bleached pulps as much as ten per cent.

A great deal of work is being accomplished with a view toward improving the existing paper-making methods. For example, the southern pine trees were formerly employed in the production of kraft paper only. Recent investigations showed that they can also be used for book paper and writing paper. In addition, progress is being made in the endeavor to produce satisfactory newsprint paper from these pines. A method known as the semi-sulphite pulping process was developed at the Forest Products Laboratory, and was applied successfully to the manufacture of pulp from the species of southern pine known as loblolly. The other species, slash, longleaf, and shortleaf, are very similar to loblolly, and their possibilities for use in paper making are

being determined. Similar work is done on other species of forest trees. Those who are engaged in the immense paper manufacturing industry of the country are well aware of the importance of these researches, and there is a great deal of coöperation between the industry and that famous institution at Madison, Wisconsin. The utilization of wood as a raw material for the production of foodstuffs, animal feed, motor fuels, and other articles, processes which have become necessary in some countries of Europe, also forms a subject of research at the Forest Products Laboratory. Ethyl alcohol for example, is made by the fermentation of wood, from which are also derived sugar, animal feed, and furfural. Investigations along these lines must always be regarded as the parents of potentially great industries. The Forest Products Laboratory maintains a staff of engineers, physicists, microscopists, foresters, wood technologists, and chemists. Of the latter, there are a total of twenty-three, divided among the grades as follows: five principal chemists, six senior chemists, three chemists, two associate chemists, four assistant chemists, and three junior chemists.

The Bureau of Public Roads

The Bureau of Public Roads of the Department of Agriculture is the road-building agency of the Federal Government. Organized in 1893 as the Office of Road Inquiry, the Bureau has played a vital part in the tremendous expansion of the highways that has occurred since that date. At the present time, the Bureau, in coöperation with State Highway departments, administers the Federal-aid highway system which includes about 210,000 miles of roads. This wonderful system of highways, by means of which one can travel from one end of the country to the other over continuously improved routes, involves heavy expenditures. In the fiscal year 1936, for example, a total of \$245,000,000. was appropriated for highway purposes.

The vast construction work of the Bureau has its scientific basis in researches which are designed to extend the frontiers of the science of road building. The Division of Tests concerns itself with problems involved in the characteristics of road materials, and in the study of the forces of climate and traffic that affect road structure and design. The laboratories of the Bureau are well equipped for the physical testing and chemical analyses of asphalts, asphaltic mixtures, tars, road oils, Portland cements, galvanized metal, paints, and rocks. Investigations are conducted to devise better tests for determining the quality of road building materials. As a practical aid in these investigations, a

large outdoor testing ground is maintained at the Department of Agriculture experimental farm at Arlington, Virginia. Here it is possible to test various kinds of road surfaces under controlled traffic conditions, and to observe the effects of climate and other forces. It is thus possible to correlate the laboratory findings with the actual performance under everyday conditions of use.

Most of the scientific work of the Bureau is of a physical nature and is done by highway engineers. The chemical work is utilized largely as an adjunct to the major researches in bituminous materials and soil subgrades. The Bureau of Public Roads employs six chemists of whom four are in the associate grade and two in the junior.

Publications of the Department of Agriculture

The publications of the Department of Agriculture appear in many different series which are based upon the nature of the information recorded in them. For instance, the *Technical Bulletins* embody the results of the scientific and research work of the various Bureaus. The *Circulars* usually contain semi-technical material of a somewhat informal and general nature. *Farmers' Bulletins* deal with a wide range of subject matter. They are non-technical, and contain recommendations and directions for procedure in modern farm and household practices. *Leaflets* are very similar to *Farmers' Bulletins* except that they are limited to eight pages in length. *Service and Regulatory Announcements* embody the notices of judgment, and other information required in the enforcement of regulatory acts. The *Notices of Judgment* under the Food and Drugs Act are included in this series. The *Yearbooks* of the Department are a fine source of information on different phases of agriculture. The one for 1939 deals with the general subject of "Food and Life", and is a volume of 1165 pages.

The *Experiment Station Record* is an abstract journal which reviews the world-wide scientific literature pertaining to agriculture and home economics. It is issued in two volumes a year of seven numbers each, and each volume contains about three thousand five hundred abstracts of current research. There are other series of publications such as *Statistical Bulletins*, *Agricultural Situation*, *Climatological Data* which, however, are of no direct interest to chemists. Many research publications of the Department appear in the *Journal of Agricultural Research* and outside publications like the *Journal of Official Agricultural Chemists*, the *Journal of The American Chemical Society*, *Journal of Biological Chemistry*, etc.

It would be difficult to follow through the publications of the Department on a particular subject, if there were no index available. There is, however, an index volume which covers the publications of the Department for the years 1901 through 1925. It is a volume of two thousand six hundred and eighty-nine pages. It lists alphabetically all the publications by subject and author. The volume is very effectively cross-indexed, and by its use, one can readily locate an article on a particular subject or one by a particular author. The *Index to Publications* for the years 1926 to 1930 inclusive appeared in 1935, and that for 1931 through 1935 has also been published. Both of these volumes, like their predecessor in the field, are excellent sources of information regarding the work of the United States Department of Agriculture. It is possible also to locate the publications which have appeared since 1935. A great many of the publications listed in these volumes are of a routine nature. Other papers embody the results of the researches of many able investigators.

The National Agricultural Research Center

In recent years, the Department of Agriculture has established an institution of great significance; one whose importance will probably increase with the passing of time, the National Agricultural Research Center at Beltsville, Maryland. This institution can be said to have started in 1910 when four hundred and seventy-five acres of land were purchased for the practical experimental work of the Bureau of Animal Industry. Its major development, however, has occurred in the past eight years, and today the Research Center enjoys the facilities of an area of about thirteen thousand acres. This large territory, devoted almost entirely to research work in all the phases of agriculture, has already provided the setting for important work, and its future development may well make it the most important agricultural research center of the world. There is close coöperation between this institution and the laboratories of the Department in Washington and in the field.

At the present time, the following Bureaus have headquarters in Beltsville: Animal Industry, Dairy Industry, Entomology and Plant Quarantine, Biological Survey, Plant Industry, Food and Drug Administration, Forest Service, and Soil Conservation Service. The Bureau of Animal Industry has excellent facilities for studying the communicable diseases of livestock, and for conducting researches in animal nutrition and related fields. The Bureau of Dairy Industry maintains a large herd for dairy cattle breeding experiments and for

investigations into the various dairy manufacturing processes. The Bureau of Entomology and Plant Quarantine has an apiary for bee culture investigations. A large part of its investigations of insecticides is carried out here. The Bureau of Plant Industry utilizes an experimental farm for determining, among other things, the effect of fertilizers on the yield and chemical composition of pasture plants. The Food and Drug Administration finds, at Beltsville, all of the facilities it needs for the practical testing of proprietary insecticides and the ingredients entering into their composition. The Forest Service is here attempting to determine the best methods for the growing of timber crops. The methods which must be employed to produce quick-growing pulp and timber crops on second-grade agricultural land, are receiving attention. Thus, the Bureaus of the Department find at Beltsville the needed facilities for conducting important practical experiments.

Chemist Advisory Council, Inc.

Secretary's Report for the Year 1939

**Presented at the
Second Annual Meeting of the Members of
Chemist Advisory Council, Inc., held on January 31, 1940.**

THE first annual meeting of the members of Chemist Advisory Council, Inc., was held on January 20, 1939. Since then, a special meeting of the members was held on March 30, 1939. The members of the Board of Directors held five formal meetings during the year. The Executive Committee held one formal meeting on May 16, 1939, and other committees held informal discussions. During 1939, seven new members were elected, bringing the total membership, as of January 1, 1940, to nineteen.

Technical Organizations

The Council's office received cordial coöperation from the secretaries of the American Institute of Chemical Engineers, THE AMERICAN INSTITUTE OF CHEMISTS, Association of Consulting Chemists and Chemical Engineers, and The Electrochemical Society, Inc. These societies are sponsors of Chemist Advisory Council, Inc.

The North Jersey Section of the American Chemical Society maintained a standing committee for the purpose of securing financial assistance from the members of the section for the Council's work.

Correspondence was received and information supplied to prominent

members of the California, Chicago, Colorado, Detroit and Iowa Sections of the American Chemical Society.

A communication dated April 29, 1939, was received from the secretary of the New York Section of the American Chemical Society, containing the following Resolution by the Board of Directors of that Section:

"It was moved, seconded and carried that the feeling of the Board is regret that (1) the New York Section has no funds available which can be appropriated to the support of the Chemist Advisory Council; (2) The Directors are not in favor of soliciting funds for this purpose from the membership of the New York Section."

With the assistance of Mr. E. M. Allen, former president of the Manufacturing Chemists' Association, negotiations with the Association are still in progress. The secretary of the Association has informed your secretary that the work of the Council was recently discussed at a meeting of the Executive Committee of the Association. The *General Bulletin* of the Association, dated December 19, 1939, contained the following statement:

"CHEMIST ADVISORY COUNCIL. Attention of the members is called to the services of the Chemist Advisory Council, Inc., founded in 1938 to render service to unemployed chemists and chemical engineers. The president is Dr. Walter S. Landis. The Council has a central registry, and manufacturers desiring a chemist with particular qualifications can obtain information on available men with the details of their experience and training. All services are given free, the Council being supported entirely by voluntary contributions. Requests for information on available chemists or chemical engineers should be sent to Mr. M. R. Bhagwat, Secretary, Chemist Advisory Council, 300 Madison Avenue, New York City."

Registration

Total registration of qualified chemists and chemical engineers, as of January 1, 1940, amount to 1284. 57.6% of these registrants resided in the greater New York metropolitan area, and the remaining 42.4% lived in other parts of the United States at the time of registration. Residents of 45 states, and graduates or post-graduates of 192 educational institutions in the United States are represented in this group. The qualifications of 49.5% met the requirements in Group No. 1; 48.3% in Group No. 2; and 2.3% in Group No. 3.

GROUP No. 1 (TOTAL 635)

Qualifications: B.S. degree with two or more years' industrial experience, or

M.A. degree with more than one year's industrial experience, or
Ph.D. degree with or without experience.

Residence: 47 per cent are located in the greater New York metropolitan area.

53 per cent are located outside New York.

37 states are represented.

Education: Graduates and post-graduates of 136 institutions.

52 per cent have B.S., Ch.E. degrees, etc.

19 per cent have Master's degrees.

23 per cent have Doctor's degrees.

6 per cent have foreign degrees.

Age: 45 per cent are below 30 years of age.

36.5 per cent are between 30 - 40 years of age.

13.5 per cent are between 41 - 50 years of age.

5 per cent are above 50 years of age.

Experience: 45 per cent have less than 5 years' industrial experience.

23 per cent have between 5 - 10 years' industrial experience.

21 per cent have between 11 - 20 years' industrial experience.

11 per cent above 20 years' industrial experience.

There are 44 women in this group, or about 7 per cent.

GROUP No. 2 (TOTAL 621)

Qualifications: B.S. degree but less than two years' industrial experience, or

M.A. degree but less than one year's industrial experience.

Residence: 68.2 per cent are located in the greater New York metropolitan area.

31.8 per cent are located outside New York.

40 states are represented.

Education: Graduates and post-graduates of 148 institutions.

85 per cent have B.S., Ch.E., etc. degrees.

14.7 per cent have Master's degrees.

0.3 per cent have foreign degrees.

Age: 77 per cent are below 25 years of age; 17 per cent are between 25 - 30 years of age; and the remaining 6 per cent either do not give their ages or are above 30 years of age.

Experience: 68.3 per cent have had no industrial experience, and the remaining 31.7 per cent have less than two years' experience. There are 79 women in this group, or about 13 per cent.

GROUP No. 3 (TOTAL 28)

Qualifications: Non-Graduates having more than five years' industrial experience. These men have attended one or more institutions of higher education but do not possess chemical degrees.

(This being a small group, the percentage classification did not appear to be very significant).

During the past twenty-two months of the Council's existence, 232 (or 18 per cent of the total registration) reported that they had secured permanent employment: 87 in 1938, and 145 in 1939.

The entire statistical classification submitted above is based on information given by the registrants in their records, and their statements were not verified by the Council.

In addition to the above registration, the Council received communications from about one hundred unemployed chemists and chemical engineers residing in various parts of the United States, who have not yet submitted their complete chronological records. One hundred and thirty recent immigrants from Europe having experience in the chemical industry submitted their records, which are kept on a separate file for future reference.

Registrants visiting or communicating with the Council were given sufficient useful information and suggestions to assist them in their efforts to uncover potential or existing positions to suit their respective qualifications. Graduates and post-graduates without industrial experience were given guidance, and the older men were helped by suggestions based upon their extended or varied experiences. Every effort was made to maintain the morale of those unemployed with the hope of developing their patience, courage, and perseverance. Employers were put in touch with candidates possessing the qualifications to fulfill the specifications required for vacancies. All services were given free of charge.

During 1939, the Council's office did not receive any urgent calls for financial help from registrants in need. A few cases of older men or persons with insufficient experience were brought to the attention of your Secretary by city and religious welfare agencies. They were interviewed and put in contact with proper sources of help.

During the Christmas holidays, one worthy case of an unemployed chemist who had served the profession for more than thirty-five years and who had limited funds to carry on was selected, and a small sum was given to him from the Chemists' Club Food Fund with the hope of bringing cheer to him and his family during the holidays, and confidence for the future. Since then, it is gratifying to note that he has secured permanent employment, partly due to the efforts of the Council and partly to his own personal contacts.

Financial Support

During the past year, contributions received by the Council were due to:

1. An appeal by Dr. Landis to former contributors.
2. Letters addressed by Dr. Bogert to a list of prominent persons in the chemical industry.
3. Solicitation by the members of a committee of the North Jersey Section of the American Chemical Society.
4. Personal solicitations by other members of the Council.
5. Communications from Dr. Read to a select list of persons in the educational field.
6. Response to a circular letter addressed to the members of the New York Chapter of THE AMERICAN INSTITUTE OF CHEMISTS by the chairman of the Chapter.
7. A contribution from THE AMERICAN INSTITUTE OF CHEMISTS.
8. Communication addressed by the executive secretary of the Association of Consulting Chemists and Chemical Engineers, Inc. to the members of the Association.

A total of \$6,133.02 was received during the year from 463 contributors compared with \$4,062.00 received from 164 contributors for 1938. During the past two years, 563 have assisted the Council by at least one contribution.

Classification of Contributions, Expenditures, etc.

	1938		1939	
	No.	Amount	No.	Amount
Companies	10	\$630.00		
Laboratory Groups				
(1) representing	23	143.00	(10) representing	321 981.52
Individuals	127	2,724.00		131 3,906.50
Societies and Associations.....	4	565.00		1 150.00
	<hr/>	<hr/>	<hr/>	<hr/>
	164	\$4,062.00		463 \$6,133.02
Expenditures for 1938			\$3,660.63	
Expenditures for 1939			4,756.72	
Balance, January 1, 1939			\$1,364.59	
Balance, January 1, 1940			2,775.89	

Other Donations

The office space now occupied by the Council at 300 Madison Avenue was donated by the Carbide and Carbon Chemical Corporation, and the office equipment was donated by the American Cyanamid Company and the Carbide and Carbon Chemical Corporation.

The Council received the following technical and other publications with the compliments of the respective publishers: *Chemical Industries*, *Chemical & Metallurgical Engineering*, the *Oil, Paint and Drug Reporter*, the *News Edition of Industrial & Engineering Chemistry*, *THE CHEMIST*, *The Indicator*, *The Michigan Architect and Engineer*, and *The New Yorker*. The *News Bulletin* of the National Farm Chemurgic Council, periodical reports of the Federal Emergency Relief Administration, and announcements of U. S. Civil Service Examinations were also received. Information regarding positions available, as published in the Sunday issues of the *New York Herald Tribune* was also forwarded with the compliments of the *Tribune*.

The Treasurer and other members of the Board donated all clerical services required for the Council incidental to their respective offices.

Publicity

Abstracts of the secretary's report, presented during the first annual meeting of the members held last year, and the election of officers, etc., were covered by the technical and public press.

The following publications commented either editorially or in their news items urging the chemical profession to support the work of the Council: *Chemical & Metallurgical Engineering*, *Chemical Industries*, *Oil, Paint and Drug Reporter*, *The Indicator*, and THE CHEMIST.

A statement prepared by the members of the Council describing the services and objectives of the organization was published in the July 10, 1939 issue of the *News Edition of Industrial & Engineering Chemistry*, and was again reprinted in the July 17th, 1939 issue of the *Oil, Paint and Drug Reporter*.

Pamphlets describing the objectives and services of the Council and typical case histories were distributed among chemists and chemical engineers during the Exposition of Chemical Industries held in December, 1939.

The *Oil, Paint and Drug Reporter* and *Chemical Industries* published, with their compliments, insertions in their Employment Sections urging unemployed chemists and chemical engineers to use the services of the Council. The *News Edition of Industrial & Engineering Chemistry* also mentioned the Council's name in the section referring to information on employment.

The National Council of THE AMERICAN INSTITUTE OF CHEMISTS appointed a committee to contact persons in the educational field located in various parts of the United States, and brought to their attention the Council's activities in helping chemists and chemical engineers.

The *Office Bulletin* of the American Institute of Chemical Engineers published information regarding the objectives and services of the Council for the information of the members of the Institute, and also requested their financial support to the work of the Council.

Managers of appointment offices of metropolitan colleges and universities; the representatives of welfare agencies, the Institute of Women's Professional Relations; state employment services; vocational counsellors; and others called on your secretary to secure assistance from the Council in helping those unemployed in the technical field.

Your secretary attended practically all meetings of sponsoring and other technical societies held in the New York metropolitan area. He also attended a meeting of the American Chemical Society held in Boston in September, 1939.

Your secretary was invited to attend all meetings of the National Council of THE AMERICAN INSTITUTE OF CHEMISTS and reported to them the progress made by the Council in helping unemployed chemists and chemical engineers.

Recommendations

Based upon past experience, the following recommendations are made for your consideration and action:

The procedure now adopted in assisting chemists and chemical engineers should be continued.

The heads of the departments of chemistry and chemical engineering in colleges and universities should be informed of the Council's activities, bringing to their attention the assistance of this organization in helping graduates and post-graduates without experience.

The technical directors of industrial laboratories should be informed of the Council's services, both to the industry and to men and women with industrial experience, with the hope of securing their coöperation; first, in the matter of employment for chemists and chemical engineers, and second, to secure financial assistance to the work of the Council from the members of their respective staffs.

The procedure now adopted by the committee of the North Jersey Section of the American Chemical Society in securing subscriptions from individual chemists and chemical engineers located in their area towards the support of the Council should be extended to cover other industrial sections.

The chemical industry directly, or indirectly through the associations representing same, should be asked to lend their support to the work of the Council by perhaps underwriting the annual office expenditures. Some progress has already been made with respect to the Manufacturing Chemists' Association. Other similar organizations should also be informed of the Council's work.

Prominent members in the chemical industry who have not yet contributed to the work of the Council should again be approached for their support.

Publicity for the Council's activities through technical publications, or other suitable channels, will prove essential in obtaining the needed financial support from the chemical profession as a whole.

It is recommended that the Council should set its goal to secure a maximum of \$25,000 or a minimum of \$15,000 per year so that the permanence of the organization is definitely assured. This recommendation is based on expenditures of other professional organizations rendering similar services to their members and the industry.

Conclusion

It is indeed a deep pleasure for your secretary to submit his Second Annual Report covering the progress made by Chemist Advisory Council, Inc. He takes this occasion to extend to Dr. Landis and every member of the Board his sincere thanks and appreciation for their directions and guidance to him in carrying out the objectives of the organization. He also wishes to take this opportunity to sincerely thank Dr. Becket, Chairman of the Executive Committee, Dean Read, Frank Breyer, and Robert T. Baldwin for their prompt and sympathetic consideration to the various difficult problems which confronted the organization, and their approval of the Secretary's action in effecting solutions for same, which gave him confidence and courage in conducting the daily routine of the office. It is to be hoped that with the support of the chemical profession, the Council will continue to expand its activities and render timely and useful services to the profession in promoting the welfare of chemists and chemical engineers.

Respectfully submitted,

M. R. BHAGWAT, F.A.I.C.

Secretary.

Resolution

Presented at the Annual Meeting of the Chemist Advisory Council

TO THOSE whose generosity has made possible the continuance of our work during the past year, whose private and public commendation of our efforts has brought us so much encouragement, and whose warm-hearted and sympathetic understanding of the many problems involved has given us courage to carry on, we wish to express our most grateful thanks, and we are speaking not alone for the Advisory Council, but still more for the many less fortunate chemists who have been helped through its activities.

Some one has well said that no one in this world is useless who helps in any way to lighten the burden of his fellow man. To have restored someone's self-respect by finding him a job, to have replaced poverty and suffering by a modest competence, and to have brought happiness and encouragement where before there was only despair, must be a source of deep and abiding satisfaction to all who are responsible for these results. As Emerson has expressed it, happiness is like perfume, you cannot pour it on anybody else without spilling some of it on yourself.



COUNCIL OFFICERS

President, Robert J. Moore

Vice-President, J. W. E. HARRISON

Secretary, Howard S. Neiman

Treasurer, BURKE H. KNIGHT

COUNCILORS

DONALD H. ANDREWS
ROSS A. BAKER
M. L. CROSSLEY
GUSTAV EGLOFF

HENRY G. KNIGHT
W. T. READ
NORMAN A. SHEPARD

FOSTER D. SNELL
MAXIMILIAN TOCH
LLOYD VAN DOREN
GERALD WENDT

CHAPTER REPRESENTATIVES

New York
Charles A. Marlies

Niagara
A. W. BURWELL

Philadelphia
GILBERT E. SEIL

Washington
ALBIN H. WARTH

January Meeting

The one-hundred and sixty-seventh meeting of the Council of THE AMERICAN INSTITUTE OF CHEMISTS was held on January 9, 1940, at The Chemists' Club, 52 East 41st Street, New York, New York.

President Robert J. Moore presided. The following officers and councilors were present: Messrs.: B. H. Knight, H. G. Knight, C. A. Marlies, R. J. Moore, H. S. Neiman, W. T. Read, G. E. Seil, F. D. Snell, M. Toch and L. Van Doren. Mr. M. R. Bhagwat, Dr. W. D. Turner, and Miss V. F. Kimball were present.

The minutes of the previous meeting were approved.

The Treasurer's report, showing a bank balance as of January 9, 1940, of

\$3,610.46, with bills payable of \$111.46, was read and accepted.

Upon motion made and carried, the following new members were elected:

FELLOWS

Melsheimer, L. A.

(1940), *In charge, White Pigment Technical Service Laboratory, United Color and Pigment Company, Newark, New Jersey.*

Mostello, Anthony

(1940), *Research Chemist, Bakelite Corporation, Bloomfield, New Jersey.*

Nash, Clarence A.

(1940), *Research Chemist, Bakelite Corporation, Bloomfield, New Jersey.*

Rudd, Julius F.

(1940), *Vice-president, Rudd Lacquer Corporation, Rahway, New Jersey.*

Sparks, William J.

(1940), Chief, Oil and Protein Division, Northern Regional Laboratories, Peoria, Illinois.

Urquhart, G. Gordon

(1940), Vice-president, National Foam System, Inc., Philadelphia, Pennsylvania.

ASSOCIATES

Erikson, Carl Walter

(A.1940), Chemist, Bakelite Corporation, Bloomfield, New Jersey.

Atkinson, John Virgil

(A.1940), Chemist, Bakelite Corporation, Bloomfield, New Jersey.

Dr. Joseph W. E. Harrisson unavoidably not present, telephoned greetings to the Council.

Dr. Snell reported progress for the Committee on Licensing.

Dr. Toch discussed ways of bringing the need of such a bill to the consciousness of chemists.

Upon motion made and seconded, the date of the Annual Meeting was set for Saturday, May 18, 1940, at the Claridge Hotel, Atlantic City, New Jersey.

Mr. Bhagwat reported for the Chemist Advisory Council and announced that its second annual meeting will be held on January 31, 1940.

There being no further business, the meeting was adjourned.

CHAPTERS

New York

Chairman, Harry G. Lindwall

Vice-Chairman, Beverly L. Clarke

Secretary-treasurer, D. H. Jackson

17 John Street

New York, N. Y.

Council Representative, Charles A. Marlies

A meeting of the New York Chapter was held at The Chemists' Club, 52 East 41st Street, New York, N. Y. on March 1, 1940. The speaker of the evening was Dr. Jacque C. Morrell, F.A.I.C., associate director of research of Universal Oil Products Corporation, Chicago, Illinois, who spoke on "The Chemist in the Petroleum Industry", to a large and enthusiastic audience. Dr. Morrell's paper will appear in full in an early issue of *THE CHEMIST*.

The following resolution was presented and adopted:

Resolution

The members of the New York Chapter of THE AMERICAN INSTITUTE OF

CHEMISTS, having learned with profound regret of the death of its beloved member, Joseph F. X. Harold, on January 3, 1940, do hereby in open meeting upon this first day of March, 1940, adopt the following resolution:

WHEREAS, through the passing of Joseph F. X. Harold, the New York Chapter of THE AMERICAN INSTITUTE OF CHEMISTS has lost one of its most active supporters, and

WHEREAS, his keen mind, his exceptional ability, his clear judgment and wise counsel, combined with his high sense of honor, commanded the respect of all who contacted him; and the

memory of his cheerful, kind, and lovable qualities and sterling character will be an abiding inspiration to all who enjoyed his friendship; now, therefore, be it hereby

RESOLVED, that we extend to his family our heartfelt sympathy in their

bereavement, that this expression of our high regard and deepest appreciation of his character and of the heartfelt loss which is ours in his passing be recorded upon the minutes of the New York Chapter of THE AMERICAN INSTITUTE OF CHEMISTS, and that a copy thereof be sent to his widow.

Niagara

Chairman, Maurice C. Taylor

Vice-chairman, F. W. Koethen

Secretary-treasurer, Alvin F. Shepard

90 Courier Boulevard
Kenmore, N. Y.

News Reporter to THE CHEMIST, Margaret C. Swisher

Council Representative, Arthur W. Burwell

Carl H. Rasch, Alternate

A MEETING of the Niagara Chapter was held at the Prospect House in Niagara Falls on February 2, 1940.

The question of licensure was discussed. George Bramann reported that no bill for the licensing of chemists has been introduced into the New York Legislature. From a communication from George W. Mather, secretary of the State Board of Pharmacy, Mr. Bramann reported that, although the New York State Drug and Cosmetic Act empowers the Board of Pharmacy to define a Chemist for the meaning of the Act, it is not required to do so. In concluding the discussion, a resolution was passed to the effect that there is need for a legal definition for "a Chemist" and, if no better means can be found, there should be a State licensing law similar in principle to that prepared by the national Chapter of THE AMERICAN INSTITUTE OF CHEMISTS.

Mr. Maurice Taylor lead the discussion on "The Relationship of the Chemist to His Environment". Although the industrial chemist, the academic chemist, the government chemist and

the medical chemist have different objectives, a scientific man should take his place in public affairs and consider the immediate as well as far-reaching effects of his discoveries.

In discussing some of the problems of the chemists, Mr. Alvin Shepard stated that, because even the average business man can see the advantage of practical science, there is no need to encourage this type of research. Since pure research often shows no immediate financial returns and is therefore being neglected in spite of its recognized importance, THE AMERICAN INSTITUTE OF CHEMISTS should do something to encourage more work on the fundamental problems in this field.

Mr. Wilmer Koch reported that there has been no survey made on the compensation received by chemists. He said that there is no greater security in this than in any other occupation.

The meeting was adjourned until March first when Dr. A. L. Jennings appearing on the Hayes Lecture Series at the Buffalo Museum of Science under the auspices of the Niagara Chapter of THE AMERICAN INSTITUTE OF CHEMISTS, will give a lecture on "Liquid Air."

Pennsylvania*Chairman*, Walter L. Obold*Vice-chairman*, A. C. Angus

Secretary-treasurer, Harry C. Winter
 The Biochemical Research Foundation
 133 South 36th Street
 Philadelphia, Penna.

Council Representative, Gilbert E. Seil*News Reporter to THE CHEMIST*, Kenneth A. Shull

THE largest crowd of the year assembled at the Christian Association Building on Tuesday, January thirty-first to hear Dr. Harry L. Fisher, F.A.I.C. speak to the Pennsylvania Chapter on "Synthetic Rubbers."

Dr. Fisher, at present research chemist with the United States Industrial Alcohol Company, is one of the country's leading rubber technologists. For many years he served with the B. F. Goodrich Company and the U. S. Rubber Company, and only recently was selected by the American Chemical Society to devise a system of nomenclature for synthetic rubbers.

The term "synthetic rubber", used so frequently in both popular and scientific parlance, is actually a misnomer, for no one has ever synthesized the true rubber hydrocarbon.

In 1860, Williams separated isoprene from natural rubber. Somewhat later Bouchardat succeeded in producing a rubber-like solid material from isoprene. About the beginning of the present century Kondakoff observed that 2,3-dimethylbutadiene, butadiene, and certain other compounds could be polymerized to a product resembling rubber.

During the World War, Germany produced commercial quantities of "Methyl rubber" from 2,3-dimethylbutadiene. Methyl rubber H was obtained by storing the dimethylbutadiene in metal drums for six to ten weeks at 30°C in the presence of air. Heating

for several months under pressure resulted in the formation of Methyl rubber w.

Today there are many "synthetic rubbers" in use both in this country and abroad. The German Buna and the American Neoprene are but two examples. Some of these, especially when vulcanized, even surpass the natural product in physical properties. It is said that automobile tires made from the Buna rubber give twenty-five per cent better wear than do those made from the natural product. One of the reasons for this is that whereas rubber is affected by ozone, oxygen, sunlight, solvents, and heat most "synthetics" are not.

The following gives in concise form the most recent nomenclature and classification for "synthetic rubbers".

- A. Elastomers
 1. Elastoprenes
 - a. Butadiene rubbers
 - b. Piperylene rubbers
 - c. Isoprene rubbers (including natural rubber)
 - d. Dimethylbutadiene rubbers
 - e. Haloprene rubbers
 2. Elastolenes
 - a. Polymers, such as polyisobutylene
 3. Elastothiomers
 - a. Polyalkylene sulfides.
 4. Elastoplastics
 - a. Rubberlike polymers of acrylic and methacrylic esters.

- b. Certain mixed glyptals
- c. Plastized polyvinyl chloride
- d. Polystyrene above 65 C.
- e. Polyarylenethylenes
- f. Polyphosphonitrilic chloride
(inorganic rubber)
- B. Plastomers
- 1. True thermoplastics
 - a. Shellac
 - b. Celluloid

- c. Cellulose acetate
- 2. Thermosetting plastics
 - a. Bakelite
 - b. Glyptals
 - c. Acrylic resins

The lecture was amply illustrated with lantern slides and specimens. A very interesting and valuable discussion followed Dr. Fisher's presentation.

Washington

President, Frank O. Lundstrom

Vice-president, Albin H. Warth

Treasurer, Philip A. Wright

Secretary, Martin Leatherman
9 Quincy Avenue, Hyattsville, Md.

News Reporter to THE CHEMIST, Alexander J. Stirton

Council Representative, Albin H. Warth

Executive Committee

J. R. Adams	H. C. Fuller	N. W. Matthews	W. H. Ross
M. S. Anderson	L. R. Heiss	J. W. McBurney	E. F. Snyder
A. P. Bradshaw	J. H. Hibben	A. L. Mehring	J. J. Stubbs
R. T. K. Cornwell	B. Makower	R. M. Mehrin	E. K. Ventre
P. R. Dawson	L. N. Markwood	A. R. Merz	C. W. Whittaker
R. B. Deemer		W. M. Noble	J. F. Williams

The Washington Chapter met on Wednesday, February 28, 1940, at the Wardman Park Hotel. President Frank O. Lundstrom presided.

Dr. M. S. Anderson presented a special report of the Committee on Issues and Objectives, discussing the work being done to obtain better opportunities for the promotion of qualified chemists in the Government Service. The work is being initiated in the Department of Agriculture because of the large membership in this Department and because the fine co-operation offered by the departmental personnel office presents an opportunity to accomplish improvements that can be extended to other governmental depart-

ments. It is proposed to create a list of those available for promotion within the department. Thus the organization requiring the appointment should be presented with a register of qualified employees of lower grade within the department, from which the selection must be made unless cause can be shown why none of these employee's is suitable. This should be required before an organization would be furnished a register of eligibles from the Civil Service Commission.

Dr. W. C. Lowdermilk, assistant chief, Soil Conservation Service, a forestry expert, world traveller, and lecturer, was then introduced. Using

motion pictures taken in the Mediterranean countries and elsewhere, the speaker addressed the meeting on "The Indelible Record in the Land of the Older Countries".

The motion pictures carried the audience away on travels through England, Scotland, Holland, France, Italy, Algiers, Tunis, Libya, the Sahara, Egypt, Syria, and many other lands. The European War broke out while the travelers were in Syria and they returned home.

No serious agricultural problems were found to exist in England and in Scotland. In Holland, population pressure has forced the reclamation of land from the sea, and the leaching of salt from the reclaimed land, so that the plough could replace the fishing boat. The agricultural problems were those of drainage, not of erosion. In France, the people are very careful of their soil and interesting scenes were presented showing agriculture on sloping lands and the reclamation of sand dunes to fertile soil.

In the region about Algiers the soil is very badly eroded, and in the land of the pyramids water is an important article. The agricultural methods in northern Africa and Syria are very primitive. The desert countries have always produced more people than could be fed and when the defenses of the farmers of neighboring alluvial valleys became weak, the desert people invaded. This struggle between the tent and the housedweller has been going on for ages.

Interesting ruins were presented in the land of the older countries calling forth many references to biblical times and the civilization of the Roman Empire. The speaker concluded with a very appropriately worded commandment to be added to those of Moses, reflecting man's relation to the soil which he must inherit as a faithful steward.

Dr. Lowdermilk was warmly applauded for his very stimulating presentation which was enjoyed by the ladies and non-professional friends as well as the members present.

BOOKS

CRYSTALLINE ENZYMES. THE CHEMISTRY OF PEPSIN, TRYPSIN, AND BACTERIOPHAGE. By John H. Northrop. *Columbia University Press*. 1939. 176 pp. \$3.00.

Crystallization is a landmark in the history of an organic compound. Consider the dramatic *sequelae* that have marked the isolation in crystalline form of some of the vitamins, hormones, and enzymes in recent years. In rapid order their structure has been unfolded, their synthesis realized and their physiological relations better understood. Dr. Northrop and his colleagues at the Rockefeller Institute for Medical Research at Princeton have been among

the foremost contributors to the exacting field of enzyme chemistry during the past decade. He has brought within the confines of a small volume the summation of present knowledge on the chemical aspects of the digestive enzymes and bacteriophage.

This monograph, based on the Jesup Lectures given at Columbia University in 1938, discusses the isolation, tests for purity, general properties, kinetics of reactions, activation and inactivation, of crystalline pepsin, chymo-trypsin, carboxypeptidase, and their precursors.

Among the criteria for purity, elaborate use is made of solubility measure-

ments based on an application of the Gibbs' phase rule, which is of special interest because it is claimed to be more sensitive than immunological methods of identification of proteins. This technic is described in the appendix, which also includes detailed descriptions of methods for the isolation of the enzymes and for their quantitative determination by procedures based on the use of haemoglobin as the substrate. An adequate bibliography and index complete the work.

Dr. Northrop's book is indispensable in the library of the enzyme specialist and should be required reading for anyone interested in the techniques of the broader field of protein chemistry.

—BERNARD L. OSER, F.A.I.C.



The American Institute of the City of New York, 60 East 42nd Street, a scientific educational organization, which includes a comprehensive program for adults as well as juniors, announces that *The Science Leaflet*, a publication designed for science teachers in high schools, and *The Science Observer*, the official organ of the Junior Science and Engineering Clubs, will be available in a combination offer for \$2.15 for a year's subscription. The cost of a separate subscription is \$2.00 a year for *The Science Leaflet*, and \$0.50 a year for *The Science Observer*.



CHEMICALS OF COMMERCE. By Foster Dee Snell, F.A.I.C., and Cornelius T. Snell. *D. Van Nostrand Company, Inc.* 1939. 542 pages. \$5.00.

This book fills a definite need for a source of information on the composition, properties, and uses of common commercial products, many of which are omitted from the chemical dictionaries. Likewise, this volume omits

some chemicals which are not generally used in commerce because they are not of industrial importance. The selection of chemicals or chemical compounds has been based on the price-quotation pages of the trade publications. These chemicals are classified in thirty-seven groups (thirty-seven chapters) so that compounds and closely related substances occur in the same chapter.

Chapter subjects include, among others, "Inorganic Acids", "Bases or Alkalies", "Compounds of Nickel Cobalt, Manganese, and Zinc", "Hydrocarbons, other than those from Petroleum", "Petroleum Hydrocarbons and Related Products", "Alcohols", "Amines, Nitro Compounds, and Various Organic Nitrogen Derivatives", "Organic Dyes", "Natural Plant Products", "Essential Oils and Oleoresins", etc.

The language is purposely quite non-technical, to offer quick and understandable information to manufacturers or to those who are not technically trained, but the book will also supply to chemists concise information about commercial materials which cannot be found in textbooks.

An appendix includes the U. S. Caustic Poison Act, a definition of medical terms, and a summary of the Food, Drug, and Cosmetic Act.



Corning Glass Works have announced the publication of a new booklet entitled "The Evolution of Standard Taper Ground Joints." Profusely illustrated and containing thirty-two pages, the book recounts briefly the history of interchangeable standard taper development in America and the contribution of the National Bureau of Standards; and provides a wealth of

information on the fabrication and grinding of both ground joints and stop-cocks. Laboratory heads, teachers, chemists—anyone using or contemplating using Standard Taper (T) Ground Joints may obtain a copy without charge by writing the Laboratory and Pharmaceutical Division, Corning Glass Works, Corning, N. Y.

Chemical Industries Appoints New Editor

Walter J. Murphy, F.A.I.C., managing editor for the past ten years, has been appointed editor of *Chemical Industries*, national business magazine of the chemical industry. He succeeds Williams Haynes.

Prior to joining the magazine, Mr. Murphy served both in a technical and sales capacity for Air Reduction Co., American Cyanamid Co., United States Rubber Co., and Mutual Chemical Company of America.

Mr. Murphy, a graduate of Brooklyn

Polytechnic Institute, is both a chemist and chemical engineer. He is a fellow of THE AMERICAN INSTITUTE OF CHEMISTS; an active member of The American Institute of Chemical Engineers; member of The American Chemical Society; The Society of Chemical Industry (American Section); The Chemists' Club (New York); and the Salesmen's Association of the American Chemical Industry.

Lady Beware!

"Du Pont has found a way to dress ladies in coal and air."—*News Item.*
How disconcerting it would be,
When trigly clad by chemistry,
In fabrics made from coal and air,
To find they were no longer there,
But changed again, returned from
whence
They came—back to their elements!

LOUISE SHAW,
—*N. Y. Herald Tribune*

CHEMISTS

Dr. Alexander Silverman, F.A.I.C., head of the Department of Chemistry of the University of Pittsburgh, addressed the South Jersey Section of the American Chemical Society on February twentieth on "Glass, Today and Tomorrow".

Eighth American Scientific Congress

The Eighth American Scientific Congress will meet in Washington, D. C., May tenth to eighteenth, to celebrate the fiftieth anniversary of the founding

of the Pan American Union and to advance scientific thought and achievement. The Congress will include the following sections: Anthropological sciences; biological sciences; geological sciences; agriculture and conservation; public health and medicine; physical and chemical sciences; statistics; history and geography; international law, public law and jurisprudence; economics and sociology, and education. The Government of the United States has issued invitations to all of the American Republics, members of the Pan American Union, to participate in the

Congress. The official languages will be English, Spanish, Portuguese, and French. Registration forms may be obtained from the Congress Headquarters at the Pan American Union, Washington, D. C.

National Modern Pioneers' Awards

The National Modern Pioneers, sponsored by the National Association of Manufacturers, met February 27, 1940, at the Waldorf-Astoria, New York, to celebrate the one hundred and fiftieth anniversary of the American patent system, and to honor outstanding inventors and research scientists.

The program of the Modern Pioneers is designed to give recognition to American scientists, who through their inventions and research have made significant contributions to the creation of new jobs, new industries, and improvements in the standard of living.

Five hundred and seventy two inventors and scientists were selected for these awards from one thousand and twenty six nominations. Nineteen National awards were made. Two persons receiving these were Leo Hendrik Baekeland, honorary member of THE AMERICAN INSTITUTE OF CHEMISTS, and Frederick Gardner Cottrell, who received the 1938 Medal Award of the INSTITUTE.

Among the members of the INSTITUTE who received regional awards are: Frank G. Breyer, Hans T. Clarke (joint award), H. Jermain Creighton, Gustav Egloff, Carleton Ellis, Gustavus J. Esselen, Harry Linn Fisher, Harold W. Greenup (joint award), N. Vladimir Ipatieff, Martin Hill Ittner, Lester Kirschbraun, Hayden B. Kline, Jacque C. Morrell, Earle C. Pitman (joint award), Roy A. Shive, Harry Steenbock, and Vanderveer Voorhees.

In the address of welcome, Robert L.

Lund, a former president of the National Association of Manufacturers, said, "Many of our people, some of them in high places, do not understand that industrial frontiers have taken the place of geographical frontiers. They preach a philosophy of a static society, one in which the door of opportunity is closed to initiative and enterprise. Successful men and successful businesses have been attacked, and patents have been assumed to be instruments of undesirable monopoly not subject to law. To dispel these fallacies, the National Association of Manufacturers has launched this Modern Pioneer program".

Society of Chemical Industry Meeting

A meeting of the Society of Chemical Industry was held February sixteenth at the Biltmore Hotel, New York City. Dr. Wallace P. Coffey, F.A.I.C., Chairman of the American Section, presided. Mr. William B. Bell, President of the American Cyanamid Company, and Dr. E. C. Williams, Director of Research and Vice President of the Shell Development Company, talked on the subject, "The Executive and the Technologist".

Modern industry looks for its future development not to the expansion of land frontiers or new sources of raw materials, but to the creation through research of new products from existing materials. It is well to consider not only in whose hands such potentialities for change lie and how competent those hands are to control them, but to what extent there is unity of outlook between them and the business executives. Complete understanding between top executives and research leaders is most necessary.

While there is a trend toward bringing technical men into leading executive positions, there will be an interim

during which the more traditional type of executive and the research leader will have to make special effort to get together mentally. It would be too conservative to think that executives consider only money and that technical men are theoretical and impractical. The successful executive devotes much attention to understanding the basic processes of his industry and the research leader usually appreciates the problems and difficulties of executive control.

There are, however, possibilities for misunderstanding arising from the different backgrounds of the executive and research type and the way they work. The prestige and authority of a top executive may cloud true issues. In many cases, the expression of a belief by a sufficiently important executive tends to make that belief a fact. The greater he becomes, the greater will his beliefs tend to influence the facts. On the other hand, the beliefs of a scientist do not at any time have the slightest influence on the facts. This tends to breed scepticism in the scientist's mind for accepted beliefs as such and leads to misinterpretation by the executive that the scientist is reluctant to cooperate.

Three main pillars of modern technological industry are capital, science (or technology), and labor. If these three can be properly meshed by executive skill into a smoothly working whole, prosperity and safety alike are on a sound foundation. Science in industry is no dilettante occupation for dreamers but a revolutionary force which industrial executives should exert themselves to understand, go more than half way to meet, and work to blend into the complex machine of industry. Any industry which neglects

to take account of what is going on in research laboratories is on the road to decay.



A meeting of the New York Chapter of THE AMERICAN INSTITUTE OF CHEMISTS will be held on Friday, April 26, 1940, at The Chemists' Club, 52 East 41st Street, New York, N. Y., at which Dr. Marston Taylor Bogert, F.A.I.C., professor of organic chemistry at Columbia University, will speak on the "Chemistry of War."



The following officers were elected at the annual meeting of the Chemist Advisory Council in New York on January 31, 1940:

President, William T. Read, F.A.I.C.; Vice-president, Gustavus J. Esselen, F.A.I.C.; Secretary, M. R. Bhagwat, F.A.I.C.; and Treasurer, Robert T. Baldwin.



The Synthetic Organic Manufacturers' Association met on January 11, 1940, at the Chemists' Club, New York, with Dr. E. H. Killheffer presiding. The Association went on record as opposing the extension of the Reciprocal Trade Act. The secretary, referring to the Tariff Commission's Report, stated that the U. S. Treasury had received \$2,000,000. less in revenue on the Agreement rates in the whole chemical schedule than they would have received under the Pre-Agreement rates.

THE SCIENCE ANGLER

Kenneth E. Shull, J.A.I.C.

What is the best lubricant for machinery? In the case of certain mechanical contrivances the answer appears to be honest-to-goodness pure *aqua spigotus*. Bearings in ship propeller shafts, for example, have been fabricated by the heat and pressure treatment of woven textile fabrics impregnated with organic binders. Water, while acting as a cooling agent also serves as the sole means of lubrication.



From Paul Vitamin to Vitamin H—the world has of necessity become vitamin conscious. And the number of these food accessory substances recorded in literature is legion. Children of today are as familiar with their vitamin ABC's as they are with their ABC's.

But we venture to say that very few of even our most learned people are conversant with "inorganic vitamins". This term has been proposed to designate biologically active forms of inorganic compounds, such as are found in certain natural healing waters.



Scientists at the Mayo Clinic have devised a very ingenious method for analyzing mixtures of helium, oxygen, and nitrogen. It had been known for some time that there is a change in a patient's tone of voice when breathing combinations of these gases. Upon plotting the velocity of vocal tone against the amounts of the various gases present, there was found to exist a definite relationship. By using the prepared graph it is possible to analyze unknown mixtures of any combination of helium, oxygen, and nitrogen.

An industrial protein, known commercially as "Zein" has recently appeared on the market. Produced as a by-product in the processing of corn it has already found industrial application in the fields of plastics, paper coatings, adhesives, printing inks, films, and fibers.



Our gorgeous blue-eyed blondes must take greater delight in perusing hair raising stories than do other members of the so-called gentler sex.

It has been estimated that their hundred or so square inches of brain insulating surface is planted with about 140,000 hairs; brunettes are heir to only about 105,000; and the hot tempered red heads possess less than 90,000.



The Greeks had a word for it; for everything in fact. And their words have found resting places in all of our sciences. One of the most recent to be christened with a Grecian handle is the science of dendrochronology — formed from *dendros*, meaning tree, and *chronology*, to measure time by regular periods.

As is well known, it is possible to determine the age of a tree by counting the number of its rings (also true for certain female movie stars). The character (size, etc.) of these rings gives a great deal of information about climatic conditions at that particular time. Thus a thin ring for, say the year 1400, would indicate that the country was then in the throes of a drought.

EMPLOYMENT

Chemists Available

RESEARCH - DEVELOPMENT CHEMIST, F.A.I.C., M.S. (M.I.T.) Organic Chemistry. Ex-chief chemist forced to change by conditions beyond his control. Well qualified by sufficient training and fifteen years (in good positions) in chemicals, latex, gases, and patents. Best personal and professional references. Complete details for confidential consideration. Available now. Please reply to Box 11, THE CHEMIST.



FOOD AND DRUG CHEMIST, F.A.I.C., Ph.D. Formerly superintendent of manufacture of drug products; teaching experience in food and drug analysis; consultant on food and drug labels. Chief chemist in brewing manufacture; bacteriology and research on methods in brewery. Successful in handling men. Has published twenty-two papers. Listed in *American Men of Science*. Expert witness in court cases. Please reply Box 123, THE CHEMIST.



METALLURGICAL ANALYST, F.A.I.C. Long experience in analysis of iron, steel, ferrous and non-ferrous alloys. Can take charge of laboratory. Please reply to Box 113, THE CHEMIST.



CHEMIST, B.S. Age 26. Phi Lambda Upsilon. Graduate work in Organic, Physical Chemistry and Biology. French and German. Most interested in synthesis or determination of substances of biological significance. Experience in inorganic and analytical. Will listen to proposition with future. Please reply to Box 21, THE CHEMIST.

Positions Available

EXPERIENCED CHEMIST on synthetic resins, except phenol-formaldehyde resins.

CHEMICAL ENGINEERS. Recent graduates from Midwestern schools for plant work in organic field. New York State. \$1800 up.

CHEMIST with some experience in artificial leather.

Ph.D.'s for organic research. Salary open.

CHEMISTS who have organic background for starting plant work on production.

For these positions, please write to Box 22, THE CHEMIST.

ROSTER *of* MEMBERS

The April, 1940, issue of THE CHEMIST will contain the names, positions, and business addresses of members of THE AMERICAN INSTITUTE OF CHEMISTS. This list was previously scheduled for the January issue but was postponed in order to have the roster come out at the beginning of our fiscal year, May 1, 1940, and thus to include the names of all members elected up to that time.

Members are requested to assist us in making this list as accurate as possible by filling in and returning to the Secretary the following coupon. If we do not receive this coupon or other notification, your name will appear in the new roster as it appeared in that issued on January 1, 1939. We shall appreciate your prompt coöperation.

HOWARD S. NEIMAN, *Secretary*,
233 Broadway,
New York, N. Y.

Please enter the following information in the roster of
THE AMERICAN INSTITUTE OF CHEMISTS:

Name

Business position

Firm by which employed

Business address



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